IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A unit ~~(100, 101, 200, 201, 301)~~ comprising:

n ($n \geq 1$) integrators ($I_{1...n}$) in series, a first of the n integrators ($I_{1...n}$) receiving an input signal;

~~at least one~~ a first device ~~(Q),~~ which acts as a quantizer when an absolute value of a signal input ~~thereto~~ to the first device is smaller than a predetermined value, and acts as a gain element when the absolute value ~~of the signal input thereto~~ is larger than the predetermined value; and

a second device ~~(12)~~ for quantizing an output of the unit ~~(100, 101, 200, 201, 301)~~.

2. (Currently Amended) The unit ~~(100, 101 200, 201, 301)~~ of

claim 1, wherein the ~~at least one~~ first device acts as a gain device, with or without an offset.

3.(Currently Amended) The unit ~~(100)~~ of claim 2, wherein the signal input to the ~~at least one~~ first device ~~(Q_1)~~ is an output of a first integrator of the integrators ~~(I_n)~~ and ~~the~~ an output of the ~~at least one~~ first device ~~(Q_1)~~ is input to the second device ~~12~~ and as weighted feedback paths to the n integrators ($I_{1...n}$).

4.(Currently Amended) The unit ~~(100)~~ of claim 2, wherein the signal input to the ~~at least one~~ first device ~~(Q_1)~~ is an output of a first integrator of the integrators ~~(I_n)~~ and the output of the first integrator (I_n) is input to the second device ~~(12)~~, and ~~the~~ an output of the ~~at least one~~ first device ~~(Q_1)~~ is input to ~~the~~ weighted feedback paths to the n integrators ($I_{1...n}$).

5.(Currently Amended) The unit ~~(101)~~ of claim 2, wherein ~~the~~ signals output from the n integrators $I_{1...n}$ are weighted and summed and the summed output is input to the ~~at least one~~ first device ~~(Q_1)~~, and wherein an output of the first ~~at least one~~ device ~~(Q_1)~~

is input to the second device ~~(12)~~ and to an integrator ~~(I_1)~~ of the n integrators.

6. (Currently Amended) The unit ~~(101)~~ of claim 2, wherein ~~the~~ signals output from the n integrators ($I_{1...n}$) are weighted and summed and the summed output is input to the ~~at least one~~ first device ~~(Q_1)~~ and the second device ~~(12)~~, and an output of the ~~at least one~~ first device ~~(Q_1)~~ is input to ~~the~~ an integrator ~~(I_1)~~ of the n integrators.

7. (Currently Amended) The unit ~~(200)~~ of claim 2, wherein the signal input to the ~~at least one~~ first device ~~($Q_{1...m}$) where $m \leq n$,~~ is an output of ~~the~~ an integrator ~~(I_n)~~ of the n integrators, ~~the outputs~~ and wherein an output of the ~~at least one~~ first device ~~($Q_{1...m}$)~~ is input as weighted feedback paths to one or more of the n integrators ($I_{1...n}$) and ~~an~~ the output of the integrator ~~(I_n)~~ is input to the second device ~~(12)~~.

8. (Currently Amended) The unit ~~(200)~~ of claim 2, wherein the signal input to the ~~at least one~~ first device ~~($Q_{1...m}$),~~ is an output

of ~~the~~ an integrator ~~(I_n)~~ of the n integrators, ~~the outputs~~ and wherein an output of the ~~at least one~~ first device ~~($Q_{1...m}$)~~ is input as weighted feedback paths to one or more of the n integrators ~~($I_{1...n}$)~~, and wherein the output of ~~any of the at least one devices ($Q_{1...m}$)~~ the first device is input to second device ~~(12)~~.

9. (Currently Amended) The unit ~~(201)~~ of claim 2, wherein ~~the~~ signals output from the n integrators ($I_{1...n}$) are weighted and summed, the summed output is input to the ~~at least one~~ first device ~~($Q_{1...m}$) outputs~~ and wherein an output of the ~~at least one~~ first device ~~($Q_{1...m}$)~~ is input to one or more of the n integrators ($I_{1...n}$), and ~~an~~ the output of ~~one of the at least one~~ the first device ~~($Q_{1...m}$)~~ is input to the second device ~~(12)~~.

10. (Currently Amended) The unit ~~(201)~~ of claim 2, wherein ~~the~~ signals output from the n integrators ($I_{1...n}$) are weighted and summed by a summer, the summed output is input to the ~~at least one~~ first device, and wherein an output ~~($Q_{1...m}$), outputs~~ of the ~~at least one~~ first device ~~($Q_{1...m}$) are~~ is input to one or more of the n integrators ($I_{1...n}$), and an output of the summer ~~(13) output~~ is input to the

second device ~~(12)~~.

11. (Currently Amended) The unit ~~(301)~~ of claim 2, wherein ~~the~~ signals output from the n integrators ($I_{1...n}$) are weighted and summed, the summed output is input to the ~~at least one~~ first device ~~($Q_{1...m}$)~~ and the second device ~~(12)~~, and ~~outputs~~ wherein an output of the ~~at least one~~ first device ~~($Q_{1...m}$)~~ is input to one or more of the n integrators ~~($I_{1...n}$)~~.

12. (Currently Amended) The unit ~~(301)~~ of claim 2, wherein ~~the~~ signals output from the n integrators ($I_{1...n}$) are weighted and summed, the summed output is input to the ~~at least one~~ first device ~~($Q_{1...m}$)~~, and ~~outputs~~ wherein an output of the ~~at least one~~ first device ~~($Q_{1...m}$) are~~ is input to one or more of the n integrators ($I_{1...n}$) and ~~an~~ the output of ~~one of the at least one~~ the first device ~~($Q_{1...m}$)~~ is input to second device ~~(12)~~.

13. (Currently Amended) An analog to digital converter including the unit ~~(100, 101, 200, 201, 301)~~ of claim 1.

14. (Currently Amended) A digital to digital converter including the unit ~~(100, 101, 200, 201, 301)~~ of claim 1.

15. (Currently Amended) The unit ~~(100, 101, 200, 201, 301)~~ of claim 1, ~~wherein each of the m devices ($Q_{1...m}$) has~~ further comprising a plurality of the first device each having different parameters set to improve stability, improve SNR, and/or reduce introduction of artifacts.

16. (Currently Amended) ~~A method, comprising~~ method comprising the acts of:

inputting a signal to n ($n \geq 1$) integrators ($I_{1...n}$) in series to output an integrated signal; ~~and~~

forming an output signal by quantizing the integrated signal when an absolute value of ~~a~~ the integrated signal ~~input thereto~~ is smaller than a predetermined value, and amplifying, with or without offset, when the absolute value ~~of the signal input thereto~~ is larger than the predetermined value; and

quantizing ~~an output~~ the output signal.

17.(New) A unit comprising:

means for integrating a signal to form an integrated signal;

means for forming an output signal by quantizing the integrated signal when an absolute value of the integrated signal is smaller than a predetermined value, and amplifying the integrated signal when the absolute is larger than the predetermined value; and

means for quantizing the output signal.

18.(New) The unit of claim 17, further comprising weighting means located between the means for integrating and the means for forming.

19.(New) The unit of claim 17, wherein the means for integrating includes a plurality of integrators, and the unit further comprises summing means for summing outputs of the plurality of integrators to provide an input to the means for forming.

20.(New) The unit of claim 17, wherein the means for forming

include a plurality of devices having parameters chosen to reduce an effective order of the unit when the signal has a first amplitude and to increase the effective order when the signal has a second amplitude.